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EXAMINER

DO, CHAT C

ART UNIT PAPER NUMBER

2124

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,363

Applicant(s)

LAN ET AL.

Examiner

Chat C. Do

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This communication is responsive to Amendment filed 09/23/2004.
2. Claims 1-16 are pending in this application. Claims 1 and 8 are independent claims. In Amendment, claims 1, 4-8, and 11-14 are amended and claims 15-16 are newly added. This action is made final.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 4-7 and 11-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 4, the limitation "the highest horizontal frequency" in line 4 lacks an antecedence basis. The highest horizontal frequency does not define in the present claim or in the preceding claims. For examination purpose, the examiner considers the highest horizontal frequency as a coefficient at any outer bound of the picture frame. Claims 5-7 and 11-16 have similar rejection as cited above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Eri et al. ("Fast 2D IDCT Implementation with multimedia instructions for a software MPEG2 decoder").

Re claim 1, Eri et al. disclose in Figure 5 of present application a method of decoding DCT-encoded blocks of a data signal (abstract in page 3105) the method comprising: (a) predetermining a plurality of subsets of DCT coefficient positions (e.g. sections 2.1 and 2.2 in pages 3105-3106); (b) receiving a set of DCT coefficients obtained from DCT encoding a corresponding portion of a data signal (e.g. DCT coefficients input into switch in Figure 5); (c) selecting one of said subsets of DCT coefficient positions according to a value of a predetermined one of the received DCT coefficients (e.g. right column in page 3106 lines 1-18); (d) performing IDCT decoding on the selected subset of DCT coefficients to recover a representation of the corresponding portion of the data signal (Figure 5 with output of result of IDCT); and repeating steps (b) (c) and (d) for successive sets of DCT coefficients (inherently for all frames).

Re claim 2, Eri et al. further disclose in Figure 5 the data signal is video data encoded according to the MPEG algorithm (page 3105 left column line 15 under introduction section).

Re claim 3, Eri et al. further disclose in Figure 5 the data signal is video data encoded according to the MPEG2 algorithm (abstract).

Re claim 4, Eri et al. further disclose in Figure 5 the predetermined one of the received DCT coefficients is selected from among the DCT coefficients with the highest horizontal frequency (Normal IDCT in Figure 5).

Re claim 5, Eri et al. further disclose in Figure 5 the predetermined one of the received DCT coefficients has the highest vertical frequency (Normal IDCT in Figure 5).

Re claim 6, Eri et al. further disclose in Figure 5 the predetermined one of the received DCT coefficients has the lowest horizontal frequency and the highest vertical frequency (Normal IDCT in Figure 5).

Re claim 7, Eric et al. further disclose in Figure 5 the plurality of predetermined subsets of DCT coefficients (IDCT algorithms as normal, 4x4, DC, AC) consist of two subsets: a first subset (e.g. IDCT_4x4) consisting of one quarter of the discrete cosine transform coefficients having the lowest horizontal frequencies and the lowest vertical frequencies; and a second subset (e.g. IDCT(normal)) consisting of one half of the discrete cosine transform coefficients having the lowest vertical frequencies; IDCT decoding is performed on the first subset of coefficient positions if the value of the coefficients is below a predetermined threshold; and IDCT decoding is performed on the second subset of DCT coefficient if the value of the predetermined one of the DCT coefficients is equal to or greater than the predetermined threshold (e.g. page 3106 right column lines 1-18).

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Re claim 8, it is an apparatus claim of claim 1. Thus, claim 8 is also rejected under the same rationale in the rejection of rejected claim 1.

Re claim 9, it is an apparatus claim of claim 2. Thus, claim 9 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 10, it is an apparatus claim of claim 3. Thus, claim 10 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 11, it is an apparatus claim of claim 4. Thus, claim 11 is also rejected under the same rationale in the rejection of rejected claim 4.

Re claim 12, it is an apparatus claim of claim 5. Thus, claim 12 is also rejected under the same rationale in the rejection of rejected claim 5.

Re claim 13, it is an apparatus claim of claim 6. Thus, claim 13 is also rejected under the same rationale in the rejection of rejected claim 6.

Re claim 14, it is an apparatus claim of claim 7. Thus, claim 14 is also rejected under the same rationale in the rejection of rejected claim 7.

Re claim 15, Eric et al. further disclose in Figure 5 the predetermined one of the received DCT coefficients has the lowest vertical frequency (IDCT_4x4 in Figure 5).

Re claim 16, it is an apparatus claim of claim 15. Thus, claim 16 is also rejected under the same rationale in the rejection of rejected claim 15.

7. Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Lengwehasatit (U.S. 6,167,092).

Re claim 1, Lengwehasatit discloses in Figure 5 a method of decoding DCT-encoded blocks of a data signal (abstract) the method comprising: (a) predetermining a plurality of subsets of DCT coefficient positions (501-503); (b) receiving a set of DCT coefficients obtained from DCT encoding a corresponding portion of a data signal (input into 506); (c) selecting one of said subsets of DCT coefficient positions according to a value of a predetermined one of the received DCT coefficients (503 and 508 as seen in Figure 5; col. 5 lines 65-68 and col. 6 lines 1-21); (d) performing IDCT decoding on the selected subset of DCT coefficients to recover a representation of the corresponding portion of the data signal (508 or 509); and repeating steps (b) (c) and (d) for successive sets of DCT coefficients.

Re claim 2, Lengwehasatit further discloses in Figure 5 the data signal is video data encoded according to the MPEG algorithm (col. 1 line 23).

Re claim 3, Lengwehasatit further discloses in Figure 5 the data signal is video data encoded according to the MPEG2 algorithm (col. 1 line 23).

Re claim 4, Lengwehasatit further discloses in Figure 5 the predetermined one of the received DCT coefficients is the highest horizontal frequency (positions on the frame with algorithm 503).

Re claim 5, Lengwehasatit further discloses in Figure 5 the predetermined one of the received DCT coefficients is the highest vertical frequency (positions on the frame with algorithm 503).

Re claim 6, Lengwehasatit further discloses in Figure 5 the predetermined one of the received DCT coefficients has the lowest horizontal frequency and the highest vertical frequency (positions on the frame with algorithm 503).

Re claim 7, Lengwehasatit further discloses in Figure 5 the plurality of predetermined subsets of DCT coefficients (503 as IDCT algorithms) consist of two subsets: a first subset (503 and 508) consisting of one quarter of the discrete cosine transform coefficients having the lowest horizontal frequencies and the lowest vertical frequencies; and a second subset (509) consisting of one half of the discrete cosine transform coefficients having the lowest vertical frequencies; IDCT decoding is performed on the first subset of coefficient positions if the value of the coefficients is below a predetermined threshold; and IDCT decoding is performed on the second subset of DCT coefficient if the value of the predetermined one of the DCT coefficients is equal to or greater than the predetermined threshold (col. 6 lines 10-15 wherein N is the predetermined threshold).

Re claim 8, it is an apparatus claim of claim 1. Thus, claim 8 is also rejected under the same rationale in the rejection of rejected claim 1.

Re claim 9, it is an apparatus claim of claim 2. Thus, claim 9 is also rejected under the same rationale in the rejection of rejected claim 2.

Re claim 10, it is an apparatus claim of claim 3. Thus, claim 10 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 11, it is an apparatus claim of claim 4. Thus, claim 11 is also rejected under the same rationale in the rejection of rejected claim 4.

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Re claim 12, it is an apparatus claim of claim 5. Thus, claim 12 is also rejected under the same rationale in the rejection of rejected claim 5.

Re claim 13, it is an apparatus claim of claim 6. Thus, claim 13 is also rejected under the same rationale in the rejection of rejected claim 6.

Re claim 14, it is an apparatus claim of claim 7. Thus, claim 14 is also rejected under the same rationale in the rejection of rejected claim 7.

Re claim 15, Lengwehasatit further discloses in Figure 5 the predetermined one of the received DCT coefficients has the lowest vertical frequency (e.g. positions on the frame with algorithm 503).

Re claim 16, it is an apparatus claim of claim 15. Thus, claim 16 is also rejected under the same rationale in the rejection of rejected claim 15.

Response to Arguments

8. Applicant's arguments filed 09/23/2004 have been fully considered but they are not persuasive.

a. The applicant argues in page for claims 1-14 under 35 U.S.C. 102(e) that Lengwehasatit does not disclose or suggest selecting a subset of the received DCT coefficients based upon a value of one of the received DCT coefficients.

The examiner respectfully submits that Lengwehasatit clearly discloses in columns 5-6 (particularly column 6 lines 5-21) a unique algorithm of IDCT is selected and applied to a selected portion of input DCT coefficients based upon N parameter wherein if the last non-zero coefficient position in zigzag order is less

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than or equal to N, then the pruned IDCT algorithm is selected and applied to the set of selected portion of input DCT coefficients for faster computation otherwise process all the DCT coefficients as normal IDCT algorithm.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

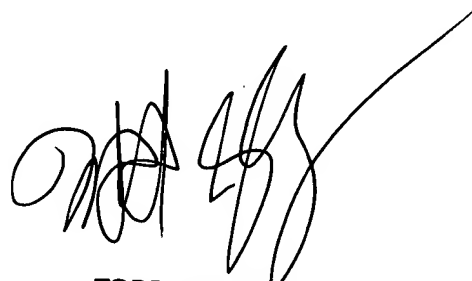
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2124

December 21, 2004



TODD INGBERG
PRIMARY EXAMINER